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OUR  
LAND  
AND  
WATER

RAVALLI

COUNTY

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## DESCRIPTION AND MEANING OF LAND CAPABILITY CLASSES

Land suitable for cultivation and other uses.

Class I - These soils have few or no conditions that limit their use. They can be safely cultivated without special conservation treatment.

Class II - These soils have some natural condition that limits the kinds of plants they can produce or that calls for some easily applied conservation practice when they are cultivated.

Class III - These soils have more serious or more numerous limitations than those in Class II. The limitations may be natural ones - such as steep slope, sandy or shallow soil, or too little or too much water. Or the limitation may be erosion brought on by the way the land has been used. Thus they are more restricted in the crops they can produce or, when cultivated, call for conservation practices more difficult to install or keep working efficiently.

Land suitable for cultivation and for other uses.

Class IV - These soils have very severe limitations that restrict the kinds of plants they can grow. If cultivated they require very careful management. Crops may fail in low-rainfall or short water years.

Land generally not suitable for cultivation but suitable for other uses.

Class V - These soils have little or no erosion hazard but have some condition impractical to remove that limits their use largely to pasture, range, woodland, recreation, water supply, or wildlife food and cover.

Class VI - These soils have severe limitations that make them generally unsuited for cultivation and restrict their use largely to pasture, range, woodland, recreation, water supply, or wildlife food and cover.

Class VII - These soils have very severe limitations that make them unsuited for cultivation and that restrict their use to pasture, range, woodland, recreation, water supply, or wildlife food and cover with careful management.

Class VIII - These soils and land forms have limitations that prevent their use for commercial plant production and that restrict their use to recreation, water supply, or wildlife food and cover with careful protection.

The above classification does not attempt to rate soils as to productivity, ease of cultivation, or monetary value. It is, however, the accepted method of classifying lands as to conservation use and treatment.

In Ravalli County there are - - - - - 1,525,760 acres  
 The area of Federal Land is - - - - - 1,102,980 acres  
 Towns, Roads and Water take up - - - - - 12,344 acres  
 This leaves a local conservation responsibility on - - - - - 409,436 acres

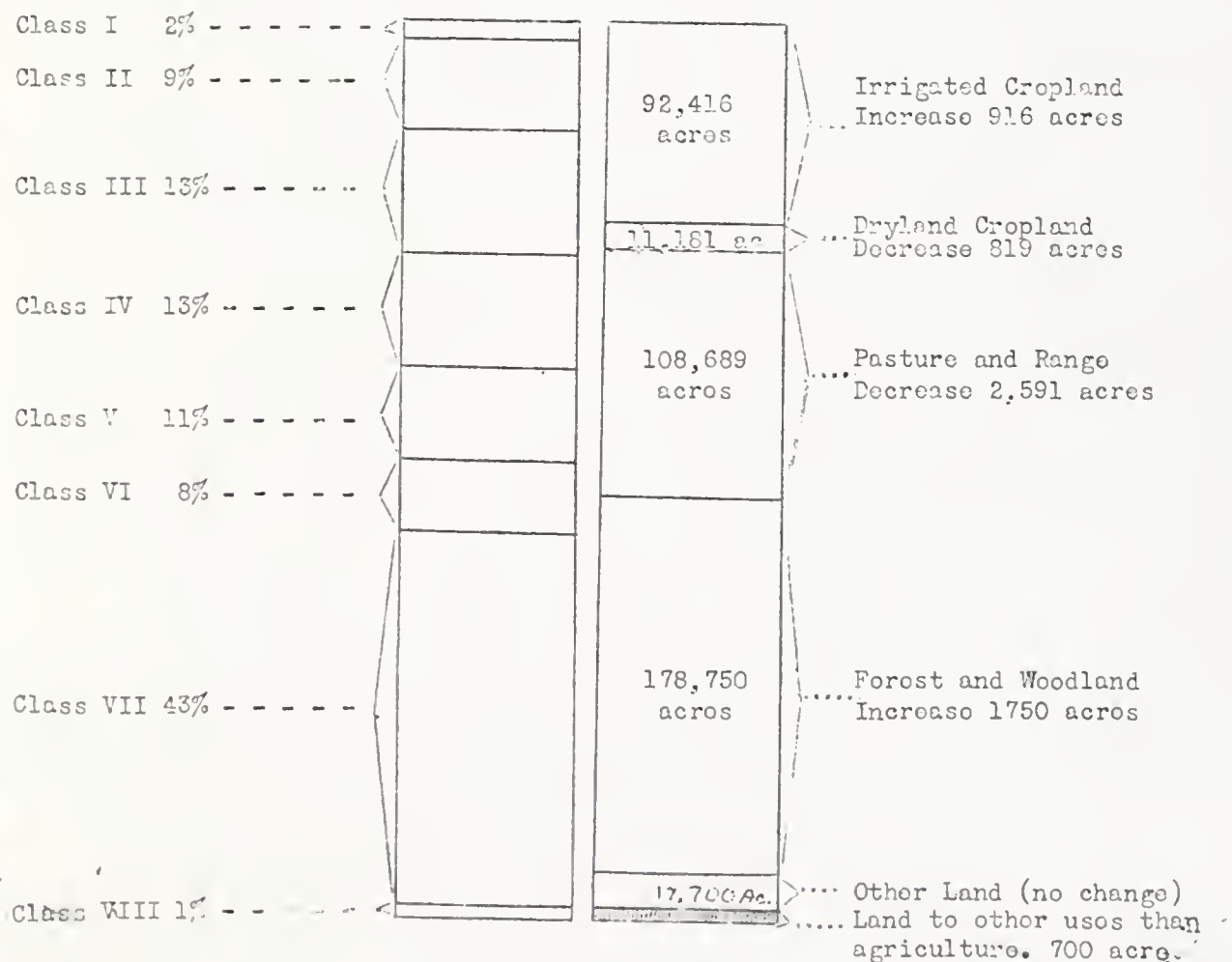
The following information is an attempt to project the use of these lands to the year 1975, to show the distribution of Land Capability Classes and to pinpoint the major conservation problems along with the proper land treatment.

Changes in land use anticipated are properly noted.

Charts on this page consider only the 409,436 acres of private, county and state lands.

Distribution of the Land  
 Capability Classes

Expected Land Use (1975)



## IRRIGATED CROPLAND

92,416 Acres

Maintenance of proper water relations between soils and crops is the key to conservation treatment on irrigated lands. Land leveling, drainage, and the use of proper irrigation methods are means of assuring proper water relations.

Eleven percent of the irrigated cropland has excess water - these should be drained. Forty two percent of the irrigated cropland has shallow, sandy, or gravelly soils and require intensive flood type irrigation or sprinkler systems. Unfortunately many of these so called "drouthy" soils occur under situations of a short season water supply.

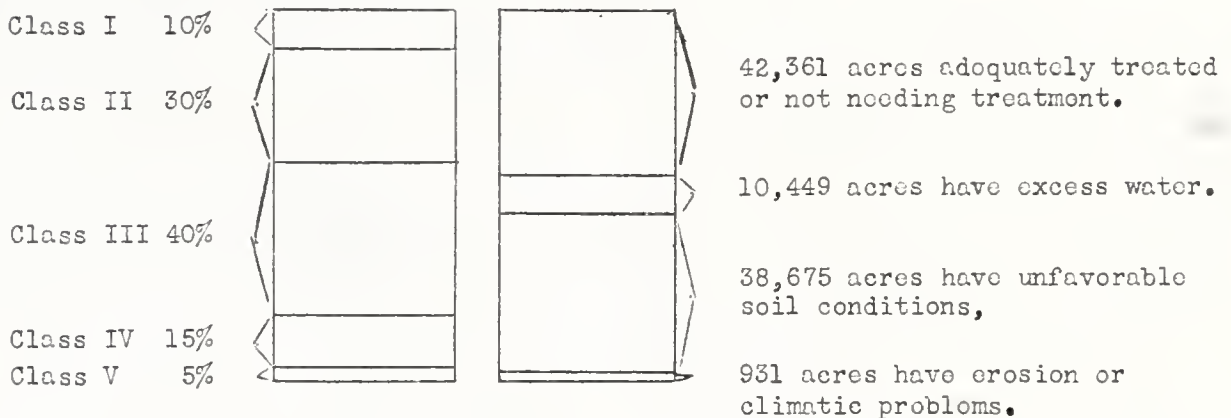
Additional types of needed land treatment are the selection of suitable crops and varieties, and an adequate soil management and fertility program.

Erosion on these lands is not a serious hazard.

The charts below illustrate the Land Capability Classes involved and their extent as well as the proportion of Irrigated Cropland in need of treatment.

Distribution of the Land  
Capability Classes

Proportion of Irrigated Cropland  
needing conservation treatment.



Roughly 58,000 acres of Irrigated Cropland experiences irrigation water shortage during normal years. On about 39,000 acres this shortage is critical.

Total outflow of the Bitter Root river is several times that needed to provide adequate water for all of the irrigated land in the county.

Ways and means of providing adequate irrigation water on these lands is a conservation objective of prime importance.



## DRY CROPLAND

11,181 Acres

Dry cropland occurs chiefly on the high benches of the east side of the valley from Hamilton north to the county line.

This land is farmed in a grain-fallow system. Experience dictates that a system of continuous grain with no fallow will produce only low yields.

Much of this land occurs on slopes of from 10-20 percent. Severe erosion takes place when the land is in fallow and not protected by a stubble mulch. Erosion generally results from the runoff produced by a rapid snow melt with a frost layer near the ground surface. Storms of cloudburst intensities occur infrequently but when they do additional soil loss results.

Shallow, sandy or gravelly soils occur on nearly 2000 acres. These give rise to "drouthy" characteristics and low yields.

Stubble-mulch tillage, cross slope stripping, and field diversions are needed conservation treatments on these lands.

Winter wheat and barley are the principal crops grown on these lands.

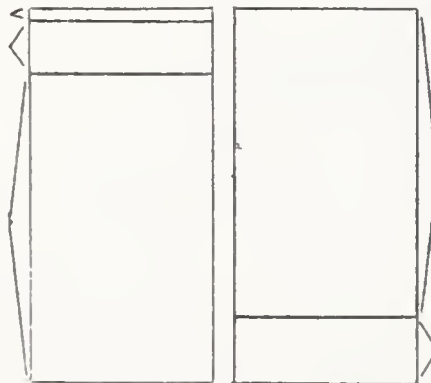
Distribution of the Land  
Capability Classes

Proportion of Dry Cropland needing  
conservation treatment

Class II 1% - - -

Class III 15% - - -

Class IV 84% - - -



9,322 acres have water  
erosion problems

1859 acres have "drouthy"  
soil conditions

## PASTURE AND RANGE

108,689 Acres

This vast area of grassland occurs for the most part between the irrigated lands and the forest lands.

In addition to the range area, 6000 acres of irrigated native grasses and 11,500 acres of seeded dry pasture are included in this section.

Cheatgrass brome has invaded nearly 24,000 acres of abandoned cropland. This area should be seeded to forage plants that will fill a particular need in the range management program.

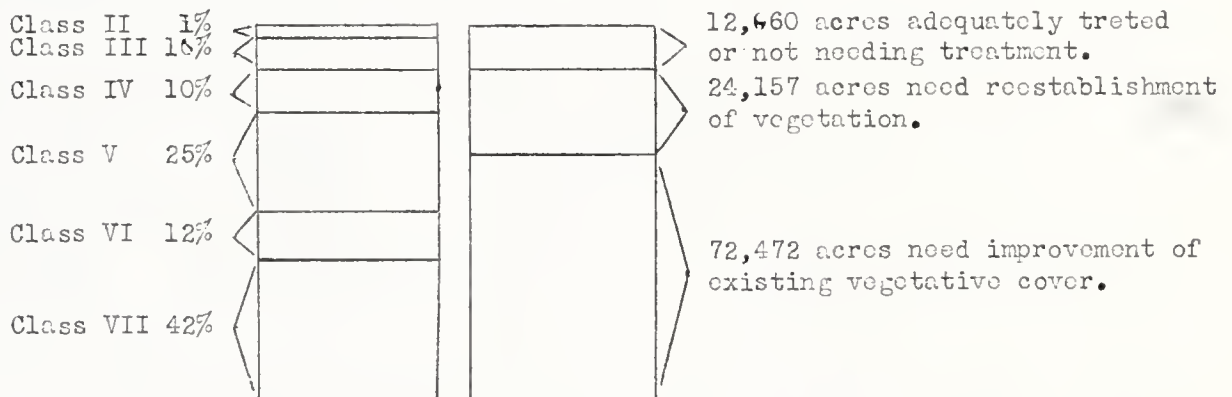
A large part of the remaining rangeland is producing half or less of its potential. Systems of deferred grazing, proper stocking and better live-stock distribution are needed in this case.

Marked variations of precipitation as well as topographic features that would limit use by livestock are important factors to consider in estimating proper stocking rates.

Poisonous plants are present in the area but they normally pose no great problem in range management.

### Distribution of Land Capability Classes

### Proportion of Pasture and Range needing conservation treatment.





## FOREST AND WOODLAND

178,750 Acres

These forest lands occur on the high benches and foothills surrounding the valley. Wooded creek and river bottoms are also included.

Most of these lands have been logged at least once. Intensive logging began about 1880 and has continued to the present time.

Clearcutting of existing young stands followed by broadcast burning creates one of the more serious conservation problems.

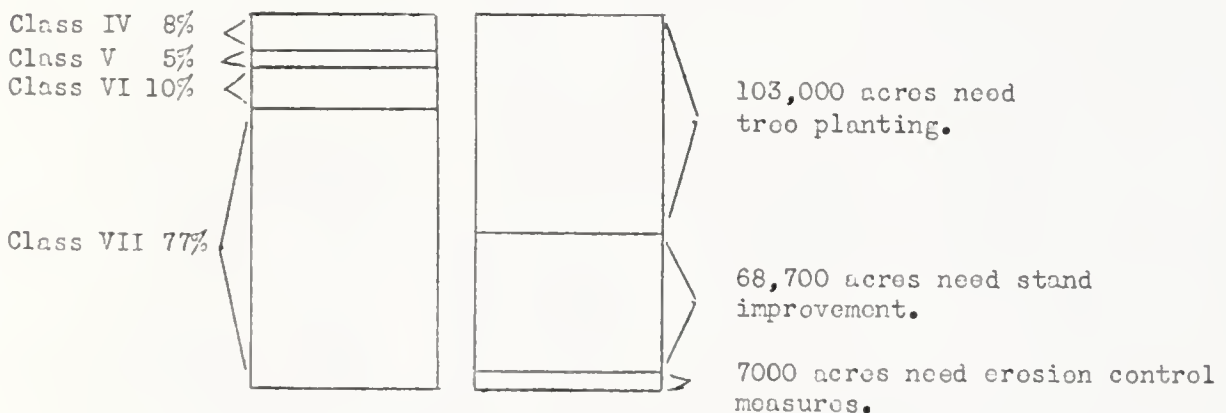
Nearly 157,000 acres of these forest lands are normally grazed by livestock. In many cases only limited forage of rather poor quality is present. In spite of this timber lands are in much demand for grazing purposes.

At present no general income is derived from the sale of wood products from these lands. This may change over the next 15 years as the expected demand for small wood products increases.

Management of forest lands is being initiated on a few of the farms and ranches in the area.

Distribution of the Land  
Capability Classes.

Proportion of Forest and Woodland  
needing conservation treatment.



It is assumed that all forest and woodland will need adequate protection against fire, insects and disease.

## WATERSHEDS

All of the land that drains to a particular stream, lake, or other body of water makes up its watershed.

Ravalli County may be considered the major watershed of the Bitter Root River. Each tributary of the Bitter Root river drains a smaller but nevertheless complete watershed.

A single watershed might have any combination of the problems of flood-water and sedimentation, erosion damage, need for drainage, or a need for an additional water supply for irrigation, recreation or wildlife developments.

A watershed project combines the actions of individuals, organized groups, and Government agencies to control runoff and provide water use in the best interests of all of the people in the watershed.

Activity in watershed projects in Ravalli County is at present confined to the Burnt Fork Watershed east of Stevensville. This project is in the preliminary planning stage. The primary objective is to secure supplemental water for irrigation with secondary benefits accruing to recreation and wildlife.

## OUR LAND AND WATER

Information contained in this report was obtained through statistical sampling of the area as well as previous resource publications relating to Ravalli County. Local organizations, individuals and agencies reviewed the facts and with their knowledge of the county they developed the information herein presented.

Cooperative efforts in the preparation of this report were by representatives of the Bitterroot Soil and Water Conservation District, Ravalli County Agricultural Stabilization and Conservation Committee, Montana State Forester, Corvallis Experimental Branch Station, U. S. Forest Service, Farmers Home Administration, and the U. S. Soil Conservation Service acting as chairman. Extension Service.

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SUPPLEMENT TO  
RAVALLI COUNTY CONSERVATION NEEDS INVENTORY

<u>PRACTICES</u>	<u>UNIT</u>	<u>AMOUNT</u>
<u>Land Use - Dry Cropland</u>		
Conservation Cropping System	Ac	10,000
Diversion (Ditches)	Ft	30,000
Stubble Mulching	Ac	4,500
Crop Residue Use	Ac	4,500
<u>Land Use - Irrigated Cropland</u>		
Irrigation Ditch Lining	Ft	530,000
Irrigation Canals & Laterals	Ft	1,223,587
Irrigation Field Ditch	Ft	3,022,500
Irrigation Pipeline	Ft	1,090,000
Irrigation Storage Reservoir	No	19
Irrigation System Sprinkler	No	965
Irrigation Wells	No	285
Irrigation System Surface or Subsurface	No	825
Irrigation Land Leveling	Ac	11,390
Drainage Mains or Laterals	Ft	600,000
Tile Drains	Ft	100,000
Conservation Cropping System	Ac	62,416
Irrigation Water Management	Ac	62,416
<u>Land Use - Pasture &amp; Hayland (Irrigated)</u>		
Pasture Planting	Ac	20,588
Hayland Planting	Ac	21,000
Pasture Proper Use	Ac	30,000
Pasture Rotation Grazing	Ac	30,000
<u>Land Use - Pasture &amp; Hayland (Dry)</u>		
Pasture Planting	Ac	18,000
Pasture Proper Use	Ac	18,000
<u>Land Use - Rangeland</u>		
Range Seeding (Conv. Land)	Ac	1,859
Range Seeding	Ac	6,000
Range Proper Use	Ac	108,689
Range Deferred Grazing	Ac	60,000
Spring Development	No	400
Troughs & Tanks	No	600
Farm Ponds	No	12

(continued)

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<u>PRACTICES</u>	<u>UNIT</u>	<u>AMOUNT</u>
<u>Land Use Woodland</u>		
Woodland Interplanting	Ac	35,000
Woodland Pruning	Ac	68,700
Woodland Thinning	Ac	68,700
Woodland, Proper Grazing	Ac	157,000
<u>Land Use - Wildlife</u>		
Wildlife Habitat Development	Ac	12,000
Wildlife Habitat Preservation	Ac	85,000
Wildlife Wetland Development	Ac	2,000
Wildlife Wetland Preservation	Ac	15,000
Streambank Protection	Ft	300,000
<u>Land Use - Recreation</u>		
Recreation Development		
Camp & Picnic	No	38



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